LE Subprograms

This section applies under OS/390 batch, VSE/ESA batch, IMS/TM and TSO. It provides information on how Natural supports IBM Language Environment (LE) subprograms.

The following topics are covered:

- Support of IBM LE Subprograms
- Enabling Natural Support of LE Subprograms
- Passing LE Runtime Options
- LE Abend Handling under OS/390 Batch and TSO

Support of IBM LE Subprograms

To support IBM Language Environment (LE) subprograms, Natural must be prepared for the CALL statement to be able to call LE subprograms. LE subprograms can be static (CSTATIC and RCA profile parameters) or dynamic subprograms of Natural.

Dynamic subprograms of Natural (LE and non-LE) are loaded via LE services (CEEFETCH or CEELOAD macro). All dynamic subprograms loaded during a Natural session are deleted upon LE environment termination, i.e. during termination of the Natural session. That is, the DELETE profile parameter does not have any effect.

Enabling Natural Support of LE Subprograms

The following is required to be able to call LE subprograms from Natural:

1. When installing Natural, the corresponding driver must be generated with option LE370=YES.
2. The IBM LE runtime modules must automatically be included from the IBM LE library during the linkage editor step. There must not be any unresolved externals starting with "CEE". Do not set the linkage editor option NCAL for OS/390 or NOAUTO for VSE/ESA.
3. Under OS/390 batch, IMS/TM and TSO, Natural can also call LE main programs, but only as dynamic subprograms. If an LE main program is to be called dynamically, this has to be indicated by specifying SET CONTROL 'P=L' before the CALL statement. Otherwise, the LE environment created by Natural will be terminated by the LE main program.

Passing LE Runtime Options

Note: LE runtime options are not available under IMS/TM.

You can pass LE run-time options by using the PARM= parameter in your JCL. The following applies:

- The run-time options that are passed to the main routine must be followed by a slash (/) to separate them from the Natural parameters.
- If you want to use a slash within your Natural parameters, then your Natural parameters must begin with a slash.

Example:

```
PARM='/ID=/,...'
```

LE Abend Handling under OS/390 Batch and TSO

Under OS/390 Batch and TSO, Natural supports the LE-specific user error handling, that is, if an LE subprogram defines a user error handler, this handler gets control when an abend or a program check occurs. If no LE user error handler has been defined, Natural reacts according to the setting of the DU profile parameter.